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ABSTRACT

This partially annotated bibliography of 189 citations presents journals and documents on paradigms for research in education. It represents source material for a report on "A Reexamination of Paradigms for Research on Teaching," a 1977 report to the National Institute of Education as part of the work of the Program on Teaching Effectiveness of the Center for Educational Research, Stanford University, California. (HJB)

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Paradigms: An Annotated Bibliography with Special Reference to Research on Teaching

by

N. L. Gage, Alexis L. Mitman, and Dale H. Schunk

Program on Teaching Effectiveness

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2nd printing

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Preface

This partially annotated bibliography on paradigms, with special reference to research on teaching, was assembled by the senior author in the process of his work on "A Reexamination of Paradigms for Research on Teaching," a report submitted in September 1977 to the National Institute of Education as part of the work of the Program on Teaching Effectiveness of the Center for Educational Research at Stanford. The present bibliography includes (a) items cited in "A Reexamination," (b) additional items that influenced the ideas presented in "A Reexamination" but were not cited explicitly, and (c) items that were not used in writing the "Reexamination" but nonetheless seem worth calling to the attention of others who may wish to continue where the "Reexamination" leaves off.

After the bibliography had been assembled, a number of the more pertinent items were abstracted by Alexis L. Mitman, Dale H. Schunk, and Denis Cronin, in their capacities as research assistants in the Program on Teaching Effectiveness. They should be given credit for the content of these abstracts.

The work of editing, collating, and assembling this material was performed by Dale H. Schunk. Matters of style were settled collaboratively by the senior author and him.

Since the paradigm is almost universally recognized to be the intellectual root of research or scholarship in any field, the effort made in the "Reexamination" and in the present bibliography hardly needs defense. If the present set of citations and abstracts proves useful to other students of paradigms in research and scholarship--especially, for our interests, to those interested in research on teaching--then the work will have served its purpose.

To assist readers in identifying items, we have put them into these categories:

GS: dealing with paradigms as they apply in general to science and scholarship without specific reference to any particular subdivision

SB: dealing with paradigms as they apply to the social and behavioral sciences other than psychology

Ps: dealing with paradigms as they apply to psychology

Ed: dealing with paradigms as they apply to educational research in general

T: dealing with paradigms for research on teaching

These symbols are printed in the margin to the left of each item.

N. L. Gage
Program on Teaching Effectiveness

Paradigms: An Annotated Bibliography with

Special Reference to Research on Teaching

GS Adelman, H., & Adelman, A. Explorations toward a logic of empirical discovery: A case study in clinical medicine. Journal of Medicine and Philosophy, 1977, 2, 54-70.

GS Agassi, J. Genius in science. Philosophy of the Social Sciences, 1975, 5, 145-161.

GS Agassi, J. Subjectivism: From infantile disease to chronic illness. Synthese, 1975, 30, 3-14.

Ps Alexander, R. D. The search for a general theory of behavior. Behavioral Science, 1975, 20, 77-100.

Ps Alperson, B. L. In search of Buber's ghosts: A calculus for interpersonal phenomenology. Behavioral Science, 1975, 20, 179-190.

SB Alwin, D. F., & Tessler, R. C. Causal models, unobserved variables, and experimental data. American Journal of Sociology, 1974, 80, 58-86.

T Anastasiow, N. J., & Mansergh, G. P. Teaching skills in early childhood programs. Bloomington, Indiana: National Center for the Development of Training Materials in Teaching Education, Indiana University, 1973.

T Anderson, L. M. Research on teaching: Applications for the classroom teacher. Paper presented at the annual meeting of the American Educational Research Association, New York, April 1977.

It is argued that educational research must yield results which are applicable to classroom teachers. Although this goal has been present since teaching effectiveness research began, there are two trends which make this goal more attainable than ever before. One trend is that certain assumptions about the nature of teaching and about the best focus for research have changed. In the past, researchers frequently assumed that there were certain methods or teaching practices which were effective. The goal of research was to discover these practices for implementation into teacher education programs. By focusing on such global classroom patterns, researchers ignored other factors such as the type of students being taught, the classroom context, and the underlying processes. In recognizing these limitations, some researchers have begun to

supplement such work by asking why, when, and with whom something is effective. Other changing assumptions concern the roles of the teacher and student. In contrast to past thinking which frequently viewed teachers as passive users of materials or methods, current thought reflects the active role of the teacher; that is, individual teacher capabilities are important in studying any aspect of instruction. Current thinking about the student is also oriented toward a more active view in which the student must attend to the task at hand and then adequately process information. This contrasts with past thinking that the student was a passive learner. These assumptions, taken together, mean that research should choose variables and ask questions which focus on specific teacher behaviors and their immediate effects on the needs of learners in a given context. A second trend concerns the development of advanced data analysis procedures and methodologies. The current sophisticated classroom observational systems are capable of telling us far more specifically than in the past what occurs in the classroom. Designs should take advantage of this sophistication. Some future directions for research on teaching are discussed.—
Dale H. Schunk

T Armento, B. J. Selected correlates of effective teacher behavior during concept instruction: Their design, utility and limitations. Paper presented at the annual meeting of the American Educational Research Association, New York, April 1977.

T Atkinson, R. C. Ingredients for a theory of instruction. American Psychologist, 1972, 27, 921-931.

In deriving optimal instructional strategies, four criteria must be specified. These are: (a) a model of the learning process; (b) admissible instructional actions; (c) instructional objectives; and (d) a measurement scale that permits costs to be assigned to each of the instructional actions and payoffs to the achievement of instructional objectives. If these four elements can be given a precise interpretation, then it is generally possible to derive an optimal

instructional policy. In recent years, some powerful tools have been developed for discovering optimal or near optimal procedures if they exist. These procedures have been developed in the context of control theory and are seen as applicable to instruction. Two examples are discussed which show the derivation of optimal procedures. Both examples deal with relatively simple problems and do not indicate the range of developments that have been made or that are clearly possible. There are, however, some serious obstacles which limit the generality of these optimization procedures. The major obstacle is that at present learning models are totally inadequate to explain the subtle ways by which the human organism stores, processes, and retrieves information. Until there is a much deeper understanding of learning, the identification of truly effective strategies is not possible. In the interim, however, optimal procedures can be developed without an all-inclusive theory of learning. What is needed is a model that captures the essential features of that part of the learning process being tapped by a given instructional task. It is emphasized that the optimization strategy is only one of many procedures which should be pursued, and that optimization research is a necessary component in a program designed to develop a general theory of instruction.--Dale H. Schunk

T Atkinson, R. C., & Paulson, J. A. An approach to the psychology of instruction. Psychological Bulletin, 1972, 78, 49-61.

The relationship between a theory of learning and a theory of instruction is discussed. Examples are presented that illustrate how to proceed from a theoretical description of the learning process to the specification of an optimal strategy for carrying out instruction. The examples deal with fairly simple learning tasks and are admittedly of limited generality. Nevertheless, they clearly define the steps necessary for deriving and testing instructional strategies, thereby providing a set of procedures for analyzing more complex problems. The parameter-dependent optimization strategies are of particular importance because they take into account

individual differences among learners as well as differences in difficulty among curriculum units. Experimental evaluations indicate that the parameter-dependent strategies lead to major gains in learning, when compared with strategies that do not take individual differences into account.--Authors

T Bader, L., Vinsonhaler, J., Gardner, J., Wagner, C., Shulman, L., Elstein, A., & Weinshank, A. Observational studies of clinical problem solving behavior in reading diagnosis: A progress report from the Institute for Research on Teaching. Unpublished manuscript, Michigan State University, 1977.

Observational pilot studies on the nature of problem solving in reading diagnosis and remediation among reading diagnosticians are described. Both manually based and computer based versions of a comprehensive set of data, named SIMCASE, included audio tapes, formal and informal test results, work samples, and home and school records. The SIMCASE was evaluated both before and after the pilot studies. For the studies, the subject diagnosticians were given access to the SIMCASE data sources and instructed to talk aloud and generate hypotheses about the nature of the child's reading difficulties when examining the information. Subjects were video-taped or audio-taped and their responses were analyzed according to a cue by hypotheses matrix. Results showed the occurrence of two types of behavior: (1) diagnosticians who produce an initially large number of hypotheses, make limited requests for data, and quickly confirm their hypotheses, and (2) diagnosticians who produce a small number of initial hypotheses, over-collect cues, and over-confirm hypotheses. Furthermore, it was found that the SIMCASE approach was sound and has potential application for preservice and inservice preparation of teachers and diagnosticians. Possible foci for future field studies on reading diagnosticians are identified.--Alexis L. Mitman

Ps Barnette, R. L. On the propriety of S-R theories utilizing nonobservable mediating events. Journal of General Psychology, 1974, 90, 191-196.

Ps Bem, D. J., & Allen, A. On predicting some of the people some of the time: The search for cross-situational consistencies in behavior. Psychological Review, 1974, 81, 506-520.

T Berliner, D. C. Impediments to the study of teacher effectiveness. Journal of Teacher Education, 1976, 27, 5-13.

It is argued that the recent movement towards performance and competency based teacher education and evaluation is premature because empirically established relationships between teacher behavior and student outcomes do not exist. The remainder of the paper discusses a potpourri of important problems that hamper the study of teaching, grouped under the categories of instrumentation, methodology, and statistics. Under instrumentation, measurement problems with both dependent variables (student outcomes) and independent variables (teacher behavior) are addressed. The inadequacy of standardized tests, the unknown predictive validity of tests for specific teaching units, and the need for multivariate measures are identified as problems for the development of adequate dependent measures. Assessing the appropriateness of teacher behavior, choosing a suitable unit of analysis to describe teacher behavior, and the lack of stability of many teacher behaviors are issues associated with measuring independent variables. Under the category of methodology, concerns that threaten the accumulation of reliable knowledge about teaching include the influence of student background characteristics, the variability of influence factors across different subject matters, the use of normative standards and volunteer samples, individual differences and aptitude treatment interactions, student mediation of teacher behavior, the imprecision of teaching behavior concepts, and the lack of generalizability of effectiveness measures across different content areas and time. Statistical problems exist because currently used statistical techniques rarely are capable of measuring outcome changes in natural classrooms. It is concluded that the scientific study of teaching cannot begin until all of these problems can be dealt with.--Alexis L. Mitman

T Bhattacharya, S.P. Review of research on theory of teaching. Baroda, India: Centre of Advanced Study in Education, The M.S. University of Baroda, 1973.

This monograph on research on teaching presents a general overview of issues relevant to the field including the content and methodologies of several empirical studies. Historically, the field of research on teaching has been characterized by confusion and disagreement with respect to the: (a) definition of teaching; (b) nature and components of teaching; (c) definitions and types of theory; and (d) nature of a theory of teaching. Even if one accepts the idea that a theory or theories of teaching are desirable, there is little agreement on what components are essential for a theory, the proper criteria for evaluating any theory, and the type of relationship between theories of learning and theories of teaching. Models of teaching discussed include conditioning, cognitive, mathematical, and cybernetical. What is most urgently needed in the field of research on teaching at the present time is a general theory of teaching expressed in abstract terms along with concomitant specific auxiliary theories, the latter to be used for experimental purposes. In constructing a global theory of teaching, an empirical approach is recommended whereby researchers initially construct auxiliary theories and, through testing and refinement, gradually evolve a more global theory. Such auxiliary theories are conceived to be specific to the research design, population studied, and measuring instruments employed. A global theory must also address itself to two philosophical issues: (a) the concept of knowledge, including the roles of cognitions, affect, and psychomotor responses; and (b) whether teaching is more an art or a science. In the process of constructing a global theory of teaching, primary emphasis in the future should be placed on conducting empirical studies aimed at discovering generalizations, and less emphasis should be placed on studies which merely describe the teaching process or those involving only correlational analyses.--Dale H. Schunk

Ed Biggs, J. B. Educology: The theory of educational practice. Contemporary Educational Psychology, 1976, 1, 274-284.

The relationship between psychology and education may be expressed in terms of two general models: the traditional hierarchical model, according to which psychology is the "parent" discipline; and a parallel model, in which the relationship between "pure" theory and its application is metaphoric rather than paradigmatic. The hierarchical model, however, does not hold even for such a "tight" area as behavior modification, let alone for educational practice in general.

Educational practice, as a professional enterprise, should be guided by a consistent set of constructs taken from the practitioner's universe of discourse. The professionalization of education has been delayed because of attempts, mostly vain, to guide practice by applying constructs derived from other disciplines. Other disciplines, notable psychology, can be useful for education but in a metaphoric sense only. "Educology" is suggested as a convenient term for the set of constructs that should give coherence to educational decision-making.

--Author

Ps Black, D. R. Beyond the two disciplines of scientific psychology: Some alternatives. Unpublished manuscript, Stanford University, 1975.

GS Blackwell, R. J. A structuralist account of scientific theories. International Philosophical Quarterly, 1976, 16, 263-274.

SB Boocock, S. S. Toward a sociology of learning: A selective review of existing research. Sociology of Education, 1966, 39, 1-45.

T Brophy, J. E. Reaction to Barak Rosenshine's "Recent research in elementary schools". Paper presented at the annual meeting of the American Educational Research Association, New York, April 1977.

T Brown, J. L. Systematic development and teaching skills. Bloomington, Indiana: National Center for the Development of Training Materials in Teaching Education, Indiana University, 1973.

Ed Bruner, J. The role of the researcher as an adviser to the educational policy maker. Oxford Review of Education, 1975, 1, 183-188.

SB Bryant, C. G. A. Kuhn, paradigms and sociology. British Journal of Sociology, 1975, 26, 354-359.

Urry has recently discussed two responses to Kuhn with respect to sociology. The nonradical response is that we must put an end to competition from rival schools of thought and establish a single paradigm. The radical response holds that we must overthrow the increasingly crisis-ridden hegemonic paradigm of structural-functionalism and replace it with an existing theory. Urry rejects both of these responses and recommends instead that we abandon the practice of discussing sociology in Kuhnian terms. It is argued here that this objection is unfounded. While modeling sociology on natural science unreflectively is wrong, it seems perfectly plausible to note similarities and differences. Unlike natural science, there is little agreement in sociology on the existence of paradigms. For one, there is no agreed meaning for several commonly-used terms. This diversity makes comparability of findings very difficult, and also helps to explain why sociology at present is multi-paradigmatic. For another, social relations themselves are so often ambiguous or multi-faceted that different interpretations of the same events are common. Also, the unending variation in forms of social life provides new occasions for theorizing. The multi-paradigmatic nature of sociology is seen not as a matter for regret but rather as necessary given the present state of the science.--Dale H. Schunk

T Bush, R. N. We know how to train teachers: Why not do so! Journal of Teacher Education, 1977, in press.

T Callewaert, S., & Kallos, D. The rose coloured wave in Swedish pedagogy. Educational Studies, 1976, 2, 179-184.

Scientific research in pedagogic should aim at describing existing pedagogical practices within the society and to work out theories to explain the causes of these practices. The immediate causes are linked to the political and economic

structure of the state. Pedagogical research should furthermore--using as a starting point the space of options within a given structure--analyse possible alternative strategies and map out the consequences of their implementation. The problems confronting pedagogical research today cannot be answered within a traditional logical empirical (or positivist) framework. Beginning in the late sixties a new trend in pedagogical research became visible. This rose-coloured wave is in essence non-scientific and mainly ideological in character. It is pedagogical research as a new middle class phenomenon. Its problems are derived from conflicts within the ruling class although they are presented in many instances as radical. The representatives of this trend hold the view that it is the obligation of research to tell the politicians and the public what the purpose should be for pedagogical practice and that research is the inventor and initiator of change. This type of research is not descriptive and not explanatory. It is ideological and its function is to hide reality and its theoretical explanation. It is finally stated that this trend is a response to objective needs in the Swedish society. The rose coloured wave can be described and explained but not in itself be eliminated today.--Authors

Ed Carroll, J. B., & Suppes, P. The committee on basic research in education: A four year tryout of basic science funding procedures. Educational Researcher, February 1974, pp. 7-10.

SB Carroll, M. P. A test of Newcomb's modification of balance theory. Journal of Social Psychology, 1977, 101, 155-156.

T Cazden, C. B., Bond, J. T., Epstein, A. S., Matz, R. D., & Savignon, S. J. Language assessment: Where, what and how. Anthropology and Education Quarterly, 1977, 8, 83-91.

GS Checkland, P. B. Science and the systems paradigm. International Journal of General Systems, 1976, 3, 127-134.

We live in a world which is largely man-made, one which has been created in the last 350 years by modern science. The power of science is the power of its method, which we may summarize in terms of three concepts: reductionism,

repeatability and refutation. We may reduce the variety of the real-world in experiments validated by their repeatability; and we may make intellectual progress by the refutation of hypotheses. It seems beyond the power of science, however, to cope with the unstructured problems of the real-world, as opposed to the explicitly defined problems of the laboratory. In the "unrestricted" sciences progress is slow and methodological problems abound. Other ways of thinking need to be explored. One line of advance may be that of "systems thinking" which accepts that at the level of complexity observed in the real world there will be emergent properties characteristic of wholes. The systems movement seeks relations between emergent properties and the wholes which exhibit them. Work in the systems tradition is illustrated by an account of an attempt to use systems concepts as a means of tackling real-world problems without distorting them to fit techniques which happen to be available. The 300 year tradition of science and the 30 year tradition of systems thinking are not foes. We need both analysis such as science may provide and the integration which systems thinking may provide. The two movements complement each other.--Author

GS Clouser, K. D. Clinical medicine as science: Editorial. Journal of Medicine and Philosophy, 1977, 2, 1-7.

T Cohen, E. G. Sociology and the classroom: Setting the conditions for teacher-student interaction. Review of Educational Research, 1972, 42, 441-452.

T Cooley, W. W. Implications of the Harnischfeger-Wiley model for research on learning and instruction. Curriculum Inquiry, 1976, 6, 69-71.

T Cooley, W.W., & Leinhardt, G. The application of a model for investigating classroom processes. Pittsburgh: Learning Research and Development Center, University of Pittsburgh, 1975.

Numerous evaluation studies conducted over the past decade have concluded that school practices do not affect children's learning. More recent research focusing on classroom rather than school variables suggests that the instructional programs

implemented in the classroom do affect what students learn. This paper describes a model of classroom processes that can be used in research on the nature of the relationship between school practices and astudent achievement. The model specifies that criterion performance is a function of initial abilities and four classroom processes; opportunity, motivators, structure, and instructional events.--Authors

T Cooley, W. W., Leinhardt, G., & McGrail, J. How to identify effective teaching. Anthropology and Education Quarterly, 1977, 8, 119-126.

Ed Cooley, W. W., & McGrail, J. Need for research in education. Paper presented at the annual meeting of the American Educational Research Association, New York, April 1977.

SB Coser, L. A. Presidential address: Two methods in search of a substance. American Sociological Review, 1975, 40, 691-700.

GS Daniel, S. H. On understanding Kuhn's clarification of the paradigm-concept. Dialogue, October 1976, pp. 1-7.

The concept of paradigm has been the most confusing point discussed by Kuhn. Recently, Kuhn has decided that the sociological emphasis of his previous remarks needs to be highlighted by recharacterizing a paradigm as a "disciplinary matrix," one element of which is a model or exemplar which provides normal scientific inquiry with the puzzles with which the normal scientist deals. Such "constellation-paradigms" include "exemplar-paradigms," and it is the latter which distinguishes the whole constellation from other constellation-paradigms. This distinction is crucial for understanding Kuhn's description of science. Because of their failure to recognize the constellation-exemplar distinction, critics have failed to see that the set of habits or sociological characterization of scientists constitutes the constellation-paradigm which adherents of competing theories share. Furthermore, normal science is not the same as science since the former is intrinsically bound up with an exemplar-paradigm while the latter is determined by a constellation-paradigm. What all this means is that the scientific community is defined by its

constellation-paradigm, and a scientific revolution occurs within a discipline when the scientific methodology of those in the discipline changes.--

Dale H. Schunk

Ps DeCorte, E. Some aspects of research on learning and cognitive development in Europe. Educational Psychologist, 1977, 12, 197-206.

Ed Della-Piana, G. M. Toward third stream evaluation. Paper presented at the annual meeting of the American Educational Research Association, New York, April 1977.

T Doyle, W. Paradigms in teacher effectiveness research. Paper presented at the annual meeting of the American Educational Research Association, Washington, D. C., April 1975.

This paper examines teacher effectiveness research in light of Kuhn's conception of paradigm. The dominant process-product paradigm in teacher effectiveness research is compared with two alternate approaches. The process-product paradigm places primacy on teacher variables as factors influencing students' achievement. The assumption that it will be possible to find teacher behaviors which have a stable and consistent causal effect on student learning is central. As a consequence of this emphasis, researchers focus on discrete behavior classroom events and neglect student classroom behavior when explaining the relationship between teacher behavior and student outcomes. The most important student variable considered is performance in a post-treatment test. The main problem with research following this tradition is that it de-emphasizes the assumption concerning the role of explanatory models, which has caused difficulty in interpreting and integrating contradictory findings and in accounting for the full complexity of the phenomena under study. The student mediating process paradigm, derived from prose learning research, emphasizes variations in student learning outcomes as a function of the mediating processes employed by the student during the learning process itself. It is considered a very fruitful strategy, for process-process research assumes significance for understanding the effect of teacher behavior on student mediating processes, gives precise information to the teacher about the effect on

learners of his teaching strategies, and permits the selection, identification and/or construction of variables for further research. The culture-of-the-school paradigm emerges from naturalistic studies. According to the results of this research, the basic parameter of the student task is defined in terms of the exchange of performance for grades. The particular demands of classroom life require that students who care to exchange performance for grades acquire a set of response mechanisms which enable them to recognize and attend to environmental cues. The main contribution of this paradigm is that student achievement depends on the student's abilities to learn from school-like events. Therefore, there is little reason to expect that variations in teacher variables are strongly related to mean gains in student achievement. This paradigm widens the perspective of the mediating process paradigm by including the identification mechanisms produced by the particular nature of the classroom environment. Its implications for further research and for interpreting research findings deserve more attention.--Denis Cronin

Ed Easley, J. A., Jr. The natural sciences and educational research--a comparison. The High School Journal, 1966, 50(1), 39-50.

Ed Ebel, R. L. Toward more productive educational research. Paper presented at the annual meeting of the American Educational Research Association, New York, April 1977.

T Ehman, L. H., & Van Sickle, R. L. Social studies teaching skills. Bloomington, Indiana: National Center for the Development of Training Materials in Teaching Education, Indiana University, 1973.

T Eisner, E. W. On the uses of educational connoisseurship and criticism for evaluating classroom life. Teachers College Record, 1977, 78, 345-358.

Ps Elstein, A. S. Clinical judgment: Psychological research and medical practice. Science, 1976, 194, 696-700.

Ed Elstein, A., Shulman, L., Vinsonhaler, J., Wagner, C., & Bader L. Characteristics of the clinical problem solving model and its relevance to educational research. Paper presented at the Annual Meeting of the American Educational Research Association, New York, April 1977.

Clinical tasks share a set of common goals and processes. They are concerned with action directed at the problems of a particular individual or social unit, not with

establishing norms or scientific principles. In the diagnostic mode, problems are solved by an iterative process of collecting information selectively, generating hypotheses, interpreting evidence collected in the light of these hypotheses and then combining information to reach a conclusion. The method generally used for combining data is informal or intuitive. In the therapeutic mode, the state of the system is identified only to the point where an action can be selected. Diagnosis is made either by the treatment or by response to treatment. The basic elements of this mode are states of nature, actions, outcomes, probabilities and values. Data collection in the diagnostic mode may vary along two dimensions: Thorough vs. focused and individualized vs. routine. The set of solutions considered is limited only by the contents of long-term memory and by the capacity of working memory. Subject to these constraints, a highly flexible problem space can be constructed.

The clinical model is especially well suited to the study of reading clinicians because it is problem-initiated and problem-directed. One purpose of the research program of the Institute for Research on Teaching is to identify the extent to which the model is useful for understanding educational activities.--Authors

Ed Elvin, L. The place of educational research. Oxford Review of Education, 1975, 1, 189-202.

Ed Erickson, F. Some approaches to inquiry in school-community ethnography. Anthropology and Education Quarterly, 1977, 8, 58-69.

T Erickson, F., & Mohatt, G. The social organization of participation structures in two classrooms of Indian students. Paper presented at the annual meeting of the American Educational Research Association, New York, April 1977.

GS Farganis, J. A preface to critical theory. Theory and Society, 1975, 2, 483-508.

Ed Fienberg, S. E. The collection and analysis of ethnographic data in educational research. Anthropology and Education Quarterly, 1977, 8, 50-57.

Ed Fincher, C. COBRE and the dilemmas of basic research in education. Educational Researcher, 1974, 3(2), 11-13.

Ps Flew, A. Review of Understanding other persons by T. Mischel (Ed.). Mind, 1976, 85, 63-64.

T Florio, S., & Walsh, M. The teacher as colleague in classroom research. Paper presented at the annual meeting of the American Educational Research Association, San Francisco, April 1976.

This paper describes an ethnographic and collaborative method of research that was developed during a two-year study of one kindergarten/first grade teacher. After initial collection and analysis of videotape and viewing sessions, the researcher introduced a participant observation component to the project. It is suggested that this means of increased contact and communication between researcher and teacher changed the perspectives of both parties. The teacher began to view herself as part of a team and as making a definite contribution to the research; the researcher began to reconsider the complexity of classroom phenomenon and to question critically the assumptions about methods of classroom research and change agents. During the second year of the study, the teacher's views were actively sought on the premise that both researcher and teacher would gain by sharing diverse perspectives and their own kinds of expertise. The joint efforts of teacher and researcher thus matured into an ongoing procedure for selecting research questions of mutual interest, finding instances of the particular problems, generating hypotheses to answer the questions, and testing the validity of the hypotheses by microanalysis of videotapes and focused classroom observation. One case study is presented to demonstrate this collaborative research procedure. This example illustrates how the procedure can identify possible behavioral corrrelates of a teacher's feelings about children and how this kind of data can be useful for teacher assessment and behavior change. The paper concludes that this method of research can be modified to provide in-service education in most school systems, with teams of teachers working together as cooperating insider change agents.--Alexis L. Mitman

GS Forstrom, L. A. The scientific autonomy of clinical medicine. Journal of Medicine and Philosophy, 1977, 2, 8-19.

T Gage, N. L. Paradigms for research on teaching. In N. L. Gage (Ed.), Handbook of research on teaching. Chicago: Rand McNally, 1963.

T Gage, N. L. This side of paradigms: The state of research on teaching English. In Research design and the teaching of English: Proceedings of the San Francisco conference, 1963. Champaign, Ill.: National Council of Teachers of English, 1964.

T Gage, N. L., & Unruh, W. R. Theoretical formulations for research on teaching. Review of Educational Research, 1967, 37, 358-370.

SB Gergen, K. J. Social psychology as history. Journal of Personality and Social Psychology, 1973, 26, 309-320.

SB Gewirth, A. Can men change laws of social science? Philosophy of Science, 1954, 21, 229-241.

Ps Gilbert, G. N. The transformation of research findings into scientific knowledge. Social Studies of Science, 1976, 6, 281-306.

T Gladstone, R. A quasi-mathematical approach to the adaptive value of knowledge. Unpublished manuscript, Oklahoma State University. (undated)

Glaser, R. Components of a psychology of instruction: Toward a science of design. Review of Educational Research, 1976, 46, 1-24.

This paper speculates on the nature of a psychology of instruction as a "linking science" between descriptive scientific knowledge and prescriptive educational applications. Following a historical overview, two fundamental questions are posed. The first asks what lessons from the strategies of design in other fields can be used in the application of psychological knowledge to the design of instruction. Effective design strategy is described as a successive process of generating alternatives and testing these alternatives against practical requirements, constraints, and values. The second question asks what substantive components of a psychology of instruction are necessary as the data to which design strategies can be applied. Four essential components are outlined, with related research brought to bear. The first is the analysis of competent performance. Here, contributions from the study of information structures and cognitive processes of the skilled performer and behaviorally

oriented work on rational task analysis are cited. The second component is the description of the initial state of the learner. Both "immediate" and "long term" assessment approaches have potential as diagnostic tools. Third is the conditions of instruction that can bring about competence. Suggestions are derived from research on information structures and processing mechanisms, general "learning to learn" abilities, and the influence of reinforcement on complex performance. The final component is the assessment of the effects of instructional implementation. An argument is made for the use of criterion referenced tests that can provide information for instructional decisions. Other fruitful lines of investigation related to assessment include research on the effectiveness of classroom processes and multivariate models and analyses of school learning.--Alexis L. Mitman

Ed Glass, G. V. The wisdom of scientific inquiry on education. Journal of Research in Science Teaching, 1972, 9. 3-18.

SB Glass, G. V. Primary, secondary, and meta-analysis of research. Presidential address presented at the 1976 Annual Meeting of the American Educational Research Association. Boulder, Col.: The author, Laboratory of Educational Research, University of Colorado, 1976. (Multilith)

SB Glass, G. V. Integrating findings: The meta-analysis of research. Review of research in education, 1977 (in press).

SB Goode, E. On behalf of labeling theory. Social Problems, 1975, 22, 570-583.

SB Gordon, E. W. Perspective on the status of research and development concerning minority groups in the United States. Paper presented at the annual meeting of the American Educational Research Association, Washington, D. C., April 1975.

Ed Gowin, D. B., & Strzepek, J. The far side of paradigms: Conditions for knowledge-making in English education. The English Record, October 1969, pp. 7-22.

SB Green, B. S. R. On the evaluation of sociological theory. Philosophy of the Social Sciences, 1977, 7, 33-50.

SB Griffiths, D. E. Selected annotated bibliography of models. In D. E. Griffiths, The job performance of school administrators: A research development project (E-1 SAE 9061). New York: Teachers College, Columbia University, 1962.

Ed Hall, G. E. A longitudinal investigation of individual implementation of educational innovations. Paper presented at the annual meeting of the American Educational Research Association, New York, April 1977.

Ed Hallinan, M. T. Salient features of the Harnischfeger-Wiley model. Curriculum Inquiry, 1976, 6, 45-59.

The Harnishfeger-Wiley model proposes that the most important determinant of learning and achievement is pupil pursuits, including exposure time to both instructional and noninstructional activities. Of secondary importance are teacher activities, which affect learning only as mediated through pupil pursuits, and student characteristics, which have both direct and indirect effects. The author suggests that the model is limited by the omission of variables that may influence attitudes, motivation, and allocation of time and by its inapplicability to nontraditional classrooms. In addition, it is argued that the model rests on several untested assumptions. Three major areas of literature on academic achievement are identified as a framework for viewing the unique contribution of the Harnishfeger-Wiley model. These areas are research on school effects, research on exposure to schooling, and psychological learning theory. The latter portion of the paper assesses the available empirical evidence for the Harnishfeger-Wiley model. While Wiley's own test of an early version of the model provided support, analysis of data by another researcher did not. The author points out that the latter research cannot be considered a careful replication since different indices and statistical techniques were used. Nonetheless, there are additional grounds for reexamining the empirical support claimed for the Harnishfeger-Wiley model. These include: (1) the questionable accuracy and adequacy of the EEO data used, (2) the fact that the total model has not yet been tested, (3) the questionable validity of a model that ignores relationships supported by theory and data, (4) the failure to test for an interaction effect, and (5) the fact that the model assumes a static process. It is concluded that the model has the potential to shape school policy decision and that future work should be done to extend the model.--Alexis L. Mitman

GS Hammond, K. R., & Adelman, L. Science, values, and human judgment. Science, 1976, 194, 389-396.

T Harnischfeger, A., & Wiley, D. E. The teaching-learning process in elementary schools: A synoptic view. Curriculum Inquiry, 1976, 6, 5-43.

This paper describes the background, components, and anticipated benefits of the Harnischfeger-Wiley model. The model evolved as a consequence of the authors' skepticism about the outcomes of several cross-national studies which concluded that schools have minor effects on pupil acquisition. A brief summary of the major weakness in previous classroom research precedes detailing of the model. These weaknesses include the (1) oversimplification of the classroom situation, (2) failure to consider pupil, teacher, and curriculum simultaneously, (3) isolation of theoretical, practical and empirical work, (4) reliance on design-based data analysis as a total strategy, and (5) the gap between basic research and school policy. The authors then present four criteria that a model of classroom processes should fulfill, followed by an outline and selective elaboration of the model. The model has six major components classed into three categories. The background components include curriculum, institutional factors, and personal characteristics of teachers and pupils. The teaching-learning process components are teacher activities and pupil pursuits. The final category and component is pupil acquisition or achievement. Focus on pupil time is based on the convictions that active learning time is the most important determinant of pupil achievement and that there is considerable variation in learning time across pupils and topics. The following aspects of teacher and pupil activities are examined in more detail: teacher planning and preparation, learning settings and classroom activities, teacher capabilities, grouping and individualization strategies, and time allocation from the student perspective. A hypothetical example shows that despite an equal amount of schooling, a teacher's grouping and individualization strategies may result in great differences in pupil acquisition. The paper ends

with a discussion of the model's policy implications. Empirical information stemming from the model will provide more accurate assessments for curriculum decisions and creating equal opportunities for individuals. Three research approaches for studying teacher capabilities are suggested as means to improved teacher selection, education, and evaluation.--Alexis L. Mitman

Ps Harris, R. J. The uncertain connection between verbal theories and research hypotheses in social psychology. Journal of Experimental Social Psychology, 1976, 12, 210-219.

T Hart, W. A. Is teaching what the philosopher understands by it? British Journal of Educational Studies, 1976, 24, 155-170.

T Hay, W. H. On Green's analysis of teaching. Studies in Philosophy and Education, 1965, 4, 254-263.

SB Hearn, F. The dialectical uses of ideal-types. Theory and Society, 1975, 2, 531-561.

GS Hebb, D. O. Science and the world of imagination. Canadian Psychological Review, 1975, 16, 4-11.

GS Heelan, P. A. The nature of clinical science. Journal of Medicine and Philosophy, 1977, 2, 20-32.

SB Heyl, J. D. Paradigms in social science. Society, 1975, 12, 61-67.

GS Hillcoat, B. L. Paradigms in medicine: Consequences for medical education. Journal of Medical Education, 1975, 50, 66-69.

Paradigms play an important role in the natural sciences. Basic medical science has primary paradigms from which are derived secondary paradigms that allow the practice of medicine. Medical education consists in students acquiring this paradigm and in practitioners changing their paradigm in the light of medical research. Problem-solving plays an important role in the acquisition of this paradigm. Unless educators, especially basic scientists, are aware of their own paradigm, communicating with others who hold different paradigms can be difficult and cause serious misunderstanding.--Author

GS Holton, G. On the role of themata in scientific thought. Science, 1975, 188, 328-338.

SB Huff, T. E. Discovery and explanation in sociology: Durkheim on suicide. Philosophy of the Social Sciences, 1975, 5, 241-257.

SB Hughes, E. C. Review of Schoolteacher: A sociological study by Dan C. Lortie. Harvard Educational Review, 1976, 46, 279-280.

T Kallos, D. The study of pedagogical processes (Pedagogical Reports No. 3). Lund, Sweden: University of Lund, 1976.

This report presents a theoretical discussion of various issues pertaining to the study of pedagogical processes.

During the past decade researchers in pedagogics have paid an increasing attention to the teaching process. It is stated that the picture emerging from these efforts is not very satisfactory. The aim of the paper is to trace some of the reasons for the relative failure of process oriented research, and to sketch the outlines for a necessary re-orientation.

The traditional framework of research on pedagogical processes is discussed taking into account two closely interrelated issues. The first concerns the notions of "science" and "scientific research" and the second the conceptualizations of the pedagogical process as such.

An attempt to analyze pedagogical processes is presented. The framework developed emphasizes contextual determinants of pedagogical processes and relates processes to the functions of institutionalized educational systems within capitalist societies.

The perspective outlined is used in two examples. The first deals with the issue of observational techniques and the second with the contents of pedagogical processes. The discussion concerning the contents of pedagogical processes relates the theoretical perspective developed in this paper to notions regarding "classification and framing" that have been presented by Basil Bernstein.--Author

Ed Kallos, D., & Lundgren, U.P. An enquiry concerning curriculum: Foundations for curriculum change. Fack, Sweden: Pedagogiska Institutionen, Goteborgs Universitet, 1976.

A context for the 'scientific' study of curriculum within the discipline of pedagogics is outlined. Attempts at curriculum development must take into account the various constraints imposed upon the pedagogical system of which the extant curricula form an integral part. Curriculum development should also include an analysis of the "frames" that circumscribe the implementation of a particular curriculum at the level of teaching. The concept of "frames" is functionally defined in terms of the effects it produces. The levels at which a frame is instituted, along with the nature of the decisions taken within its confines, are regarded as overt expressions of the political and economic structure as it pertains to the educational system. In view of the dialectical relationship between society and schooling, curriculum research and development on the macro level cannot be primarily normative in nature. Curriculum research, rather, must emphasize the determinants of a particular curriculum. Research on the status of curricula as a reflection of the conditions and demands of a society has been inadequate. Why certain curriculum demands dominate, and why certain groups in society are in the position of exerting an influence on the curriculum is never questioned in more normative research approaches. More research equal to the task of registering the various contextual influences exerted upon curriculum research and teaching practices is needed. A concept of curriculum that would be applicable internationally is unacceptable. Instead, what is necessary is an approach that pinpoints actual curricular decisions that are achieved under a special set of circumstances. The next step is to explain why these decisions were taken. The ultimate goal becomes the process of explaining the influence of these decisions on the teaching process.--Denis Cronin

SB Karabel, J., & Halsey, A. H. The new sociology of education. Theory and Society, 1976, 3, 529-552.

Ed Kiesler, S. B., & Turner, C. G. (Eds.) Fundamental research and the process of education: Final report of the committee on fundamental research relevant to education. Washington, D. C.: National Academy of Sciences, 1977.

Ed Kitwood, T. Educational research and its standing as a science. Studies in Higher Education, 1976, 1, 69-82.

Although educational research consumes a great deal of money and effort, it is not commonly perceived as useful by teachers and policy-makers. Using four recent studies as illustrations, the author criticizes the underlying presuppositions of educational research. First, it is argued that there is an unsound conception of what is scientific. The gap between operational definitions and terms as they function in everyday life is cited. The second criticism is that problems studied often are trivial. Here, the author suggests that methodological criteria inhibit the examination of substantative educational problems. The third point is that techniques borrowed from non-educational disciplines are inappropriate exemplars. In sum, it is contended that educational research diverts attention and resources away from genuine educational problems and produces instead a body of data offering few insights. Three steps to improve educational research are proposed: (1) research must be centrally concerned with educational processes, (2) human beings must be accredited with their powers, and (3) fresh standards of research acceptability must be established. Final remarks address the essentially flexible and spontaneous nature of education and point out that a mature science acknowledges its boundaries rather than attempting to monopolize all inquiry.—Alexis L. Mitman

T Kluwin, T. An analysis of the discourse structure of the English classroom. Unpublished doctoral dissertation, Stanford University, 1977.

T Kovaloff, A.A. Introduction: Research themes in classroom settings. Interchange, 1975, 6(4), 34-35.

This is an introductory piece for seven papers stemmping from an OISE (Ontario Institute for Studies in Education) colloquium on everyday life in educational settings. The author suggests that the central theme of the colloquium is the social organization of knowledge. Also reflected is an acceptance of the methodological view that researchers must enter as participants into classroom settings and listen more carefully to the teachers and students they seek to understand. Two papers deal with the use of participant observation in investigating classroom processes. Another paper examines, from an ethnomethodological perspective, how a member's sense of social order is accomplished. Here, a study of the incorporation of the rules of language at the primary level is the vehicle. This is followed by a related paper on the improvement of second language learning in school settings. It is implied that research on everyday life in educational settings can benefit language education. The next two papers address the possibility of a sociology of children's culture and the relevant contributions of Jean Piaget. The final paper in the set discusses the political implications of the preceding two papers. The author's summary points out that even though the papers evidence a variety of perspectives and interests, they all acknowledge the importance of everyday-life affairs in educational settings.--Alexis L. Mitman

T Krause, M.S. A partial prescriptive theory of teaching facts. Instructional Science, 1973, 2, 81-112.

Three conceptual components for learning facts are outlined: that the student (1) understand the proposition, (2) believe the proposition, and (3) be able to recall the proposition under certain circumstances. The teacher's role in facilitating these components is discussed. The teacher's goal is to help the student adopt a proper role for learning as well as assure learning of the facts themselves. It is suggested that the teacher must model, prompt, and reinforce

student efforts. The importance of a mutually positive attitude between teacher and student is emphasized. The subject area of Civics is to show that lawful political assertion and judicious political compromise are right and necessary. The teacher should begin with a nonevaluative discussion of how students feel about these matters and eventually present direct arguments in favor of Civics propositions. Expression of advocacy and disagreement should be encouraged. The teacher's final strategic consideration is to ensure the stability of the student's belief in the propositions. The school can assess the teacher's effectiveness in teaching Civics facts by anaonymous questionnaires or interviews; however, actual student behavior in public polities is the most relevant outcome. It is concluded that although practical constraints may prevent the complete application of this theory of teaching, the theory can be practical by providing a conceptual viewpoint and by guiding teacher practice and training.--Alexis L. Mitman

Ps Kruglanski, A. W. On the paradigmatic objections to experimental psychology: A reply to Gadlin and Ingle. American Psychologist, 1976, 31, 655-663.

GS Kuhn. T. S. The structure of scientific revolutions. Chicago: University of Chicago Press, 1962.

GS Kuhn, T. S. Postscript—1969. In T. S. Kuhn, Structure of scientific revolutions (2nd ed.). Chicago: University of Chicago Press, 1970a.

GS Kuhn, T. S. Reflections on my critics. In Imre Lakatos & Alan Musgrave (Eds.), Criticism and the growth of knowledge. New York: Cambridge University Press, 1970b.

T Lamb, M. L., & Swick, K. J. A historical overview of classroom teacher observation. The Educational Forum, 1975, 39, 239-247.

Ps Lambley, P. Authoritarian trends in contemporary psychology: The dominance of the paradigm. Psychological Reports, 1970, 27, 575-582.

T Lanier, J. H., & Shulman, L. S. (Project Directors) Technical proposal, Institute for Research on Teaching, Michigan State University. East Lansing, Mich.: College of Education, Michigan State University, 1975.

T Lester, F. K., Jr. Teaching skills in mathematics instruction. Bloomington, Indiana: National Center for the Development of Training Materials in Teaching Education, Indiana University, 1973.

Ed Levit, M. Common sense, scientific method, and educational research. Studies in Philosophy and Education, 1970, 7, 130-142.

SB Lewis, B. N. Some troubles with social science: A plea for research on research. Systematics, 1969, 7, 139-159.

SB Lindsey, D., & Lindsey, T. The outlook of journal editors and referees on the core requirements of scientific inquiry: A preliminary report of research. Unpublished manuscript, West Virginia University. (undated)

T Lorentz, J.L. The development of measures of teacher effectiveness from multiple measures of student growth. Paper presented at the annual meeting of the American Educational Research Association, New York, April 1977.

The methods and results for a study of the relationships between student growth and teacher competency measures are reported. Part of the Competency Based Teacher Certification Project in Carroll County, Georgia, this study used data collected in 102 classrooms, grades 1-12, during a two year period. Student growth was assessed with pre and post standardized achievement tests, self-concept measures, and direct observations of student "coping styles." Since different grade levels necessitated different test forms, a combined total of 54 subtests were used. 62 predetermined teacher competency behaviors were measured with four observation systems. Student achievement gains were computed using an analysis of covariance, with pretest, grade level, and SES as covariates. Initially, scores on the Iowa Test of Basic Skills (used in grades 3-8) were converted to standard scores. The correlations among the 54 student gain measures and the 62 teacher competency scores resulted in 374 statistically significant correlations, $p < .05$, where 167 would be expected by chance. The significant correlations are presented in a series of tables. Of the 114 significant correlations between achievement gains and competency scores, 72% were negative. For example, teachers in grades 3-8 who paused, responded to student questions, listened to students, and allowed students to speak out, had students with low gains in vocabulary achievement. The significant inter-correlations among achievement, self-concept, and coping style measures did not exceed the chance number,

thus supporting the need for several indices of student growth. It is concluded that comparable measurement of student growth over a wide grade-level range is a difficult task and that assumed teacher competency behaviors need to be re-examined on the basis of the findings.--Alexis L. Hitman

Ed Marantz, H. A note on educational reductionism. Educational Theory, 1975, 25, 330-331.

Ed Marshall, J. D. Philosophy and educational research: A comment. New Zealand Journal of Educational Studies, 1976, 11, 60-63.

SB Martin, M. The philosophical importance of the Rosenthal effect. Journal for the Theory of Social Behaviour, 1977, 7, 81-97.

GS Masterman, M. The nature of a paradigm. In I. Lakatos & A. Musgrave (Eds.), Criticism and the growth of knowledge. New York: Cambridge University Press, 1970.

GS McDonagh, E. L. Attitude changes and paradigm shifts: Social psychological foundations of the Kuhnian thesis. Social Studies of Science, 1976, 6, 51-76.

Ps McElroy, W. D. The global age: Roles of basic and applied research. Science, 1977, 196, 267-270.

Ps McGuire, W. J. The yin and yang of progress in social psychology: Seven koan. Journal of Personality and Social Psychology, 1973, 26, 446-456.

T Medley, D. M. An approach to the definition and measurement of teacher competencies. Paper presented at the annual meeting of the American Educational Research Association, New York, April 1977.

The development of a classroom observation system which measures indicators of teacher competence is described. Several decisions affected the type of system developed. One decision was that the instrument would be a low-inference as opposed to a high-inference type. Another was that only the most promising behavioral indicators, as defined beforehand, were measured, instead of all possible indicators being included. Third, teachers themselves defined the areas which they believed crucial for teacher competency. Teachers also listed specific behaviors grouped under the appropriate competency. Another decision was not to construct an instrument specifically designed to measure the teacher-generated behaviors, but rather to identify similar behaviors measured on

currently existing observational systems. A final decision was to base each behavioral indicator on more than just a single item from a single observation system whenever possible. Records of behavior were made in the classrooms of 59 teachers on all five instruments with at least two observers recording behavior on each instrument. Procedures for estimating reliability coefficients are discussed. Results showed a median reliability coefficient of .70 for single-instrument measures. This suggests that existing instruments can be employed to measure indicators of competency even though they were not constructed for that purpose. Another finding is that when items from different instruments were combined into composite measures, the composites tended to be more reliable than the single-instrument measures; the median reliability for composites was .88. This finding supports the conclusion that specified behaviors were in fact being measured. Some suggestions for future research are outlined.--Dale H. Schunk

Ed Meyer, J. W. The effects of education as an institution. Unpublished manuscript, Stanford University, 1976.

T Mitra, S.K, Psychology of teaching: National lectures (1971-72). Baroda, India: Centre of Advanced Study in Education, 1972.

This paper addresses the need for a psychology of teaching and reviews developments in the field. The importance of teaching is related to educational problems current in India, including student unrest, the need for science curricula, the rapid expansion of population and schools, and the special needs of children coming from deprived strata of society. The author then suggests and illustrates how, historically, kinds of teaching methods have evolved as a response to social needs. The major contemporary social need of India is the preparation of young people for diversity. The greater portion of the paper considers various definitions and theories of teaching. Following a review of several sources, the author defines teaching as a series of acts carried out by a teacher and guided by the formulation

of a teaching task in a formalized instructional setting. Two kinds of theories of teaching are identified: (1) theories where teacher behavior is the dependent variable and situation and personality factors are the independent variables, and (2) theories where student learning is the dependent variable and teacher behavior is the independent variable. The author then develops his own model of teaching which combines teaching as both an independent and dependent variable. In addition, the model emphasizes the contractural aspect of teaching and the teacher's cognitive map of the instructional process as antecedent conditions of teaching. The paper concludes with a number of problems that face a psychology of teaching, as well as a brief note on existing research on teaching.—Alexis I. Mitman

Ed Mosteller, F., Mosteller, G., Soper, K. A., & Berg, I. Knowledge beyond achievement: A seventies perspective on school effects—A review symposium on The enduring effects of education by Herbert Hyman, Charles Wright, and John Reed. School Review, 1976, 84, 265-289.

GS Mulkay, M. J. Three models of scientific development. Sociological Review, 1975, 23, 509-526.

GS Mulkay, M. J. The model of branching. Sociological Review, 1976, 24, 125-133.

GS Mulkay, M. J., Gilbert, G. N., & Woolgar, S. Problem areas and research networks in science. Sociology, 1975, 9, 187-203.

A general account is presented of the emergence, growth, and decline of scientific research networks and their associated problem areas. Research networks are seen to pass through three phases. The first, exploratory phase, is distinguished by a lack of effective communication among participants and by the pursuit of imprecisely defined problems. The second phase is one of rapid growth, associated with increasing social and intellectual integration, made possible by improved communication. An increasingly precise scientific consensus gradually emerges from a process of negotiation, in which those participants who are members of the scientific elite exert most influence. But as consensus is achieved, the problem area becomes less scientifically fruitful; and as the network grows, career opportunities diminish. Consequently,

the third, final phase is one of decline and disbandment of the network, together with the movement of participants to new areas of scientific opportunity.--Authors

GS Mullins, N. C. Theory construction from available materials: A system for organizing and presenting propositions. American Journal of Sociology, 1974, 80, 1-15.

SB Nathan, N. M. L. On the non-causal explanation of human action. Philosophy of the Social Sciences, 1976, 6, 241-243.

T Nuthall, G. A. Studies of teaching II: Types of research on teaching. New Zealand Journal of Educational Studies, 1968, 3, 125-147.

Research on teaching has followed a classical model of scientific inquiry. Following a series of initial tentative and exploratory field studies, attempts to develop taxonomies of classroom behavior led to a number of sophisticated descriptive studies of teachers and pupils in situ. Next came attempts to correlate observed teaching variables with measured pupil outcomes, and more recently, some carefully controlled studies of a semi-experimental nature have been conducted. Reality, however, seems more confusing than the model, and there are still interesting and important developments occurring at each of these different stages. Some examples of both historical and current research efforts are discussed for each of these three areas. What seems missing from most of these efforts is a sense of direction which can only be provided by adequate theory. However, traditional psychological theory cannot be of any significant value until researchers have themselves produced significant theoretical explanations of classroom events. The studies reviewed suggest that we know enough about some of the variables which are likely to be significant, and that the need now is not for further adaptation and stretching of old theory but instead for the creation of new theory which arises directly from the details of the behaviors it is intended to explain. Certain characteristics of classroom behavior are seen as essential elements in any theory. A theory of vicarious

learning is needed, since although not all pupils participate all of the time, all are expected to learn, and generally do to some extent. The place of pupil participation needs to be assessed independently of a priori concepts of response and reinforcement. The importance of the pupil as an independent source of variation in classroom behavior must be considered. The dual role of the teacher's actions as exerting both intellectual and motivational forces needs to be considered. Finally, researchers are cautioned not to entangle questions about the best ways of teaching with those concerning how teaching occurs.--Dale H. Schunk

T Nuthall, G.A. The search for ideal teaching methods. London Educational Review, 1973, 2(3), 29-37.

The history of research on training has been concerned with activities and procedures which have not proven useful in the search for knowledge on how best to teach. Specifically, most research has been either an irrelevant quest for the key to 'how children learn' or a succession of model-dominated studies designed to prove the superiority of the latest brand of teaching. As a result, we do not presently have a significant body of reliable knowledge concerning teaching which would allow us to make informed judgments about which instructional procedures are likely to be most desirable in any given set of circumstances. The interest in 'how children learn' arose during the child-study movement popular in the early twentieth century and was based on the premise that learning was a natural and unitary phenomenon which, once discovered, would make the work of the teacher obvious. Interest in the idea that research should provide immediate answers was a natural outgrowth of the associationist and behaviorist theories of psychology also prevalent in the early part of this century. Thorndike, for example, espoused the view that a science of education should avoid large-scale theories and instead attempt to provide specific answers to specific questions of teachers. In conjunction with both of these research goals, three models have typically been employed: behavior control, discovery

learning, and rationale models. By its very nature, model-dominated research cannot lead to an accumulation of knowledge about the nature of teaching, since a model contains a priori claims about what teaching is like and thus the nature of teaching is never in question. A model tends, as well, to reify the methods associated with it despite their questionable importance in teaching. Also, research conducted in the context of a model is not readily generalizable to other contexts. The recommendation is that research on teaching should be viewed as a valuable enterprise in its own right and should be committed to the accumulation of empirical knowledge rather than to any current teaching controversies.--Dale H. Schunk

T Nuthall, G., & Church, J. Experimental studies of teacher behavior: A preliminary report of the experimental studies of teacher behavior being conducted in the Teaching Research Project, University of Canterbury. Paper presented at the 43rd Congress of the Australian and New Zealand Association for the Advancement of Science, Brisbane, Australia, 1971.

GS Odum, E. P. The emergence of ecology as a new integrative discipline. Science, 1977, 195, 1289-1293.

T Okey, J. R., Andersen, H. O., & Brown, J. L. Competencies for science teachers. Bloomington, Indiana: National Center for the Development of Training Materials in Teaching Education, Indiana University, 1973.

Ps Olshewsky, T. M. Dispositions and reductionism in psychology. Journal for the Theory of Social Behaviour, 1975, 5, 129-144.

T Olson, D. R. On a theory of instruction: Why different forms of instruction result in similar knowledge. Interchange, 1972, 3(1), 9-24.

T Olson, D.R. Towards a theory of instructional means. Invited address presented at the annual meeting of the American Educational Research Association, Chicago, April 1974.

An argument is set forth which has as its central thesis that the means or methods of instruction have more important consequences than the content for such cognitive processes as intelligence, generalization ability, and rational thinking. This assertion stands in marked contrast to previous conceptions in both cognitive and instructional theories on the functions of the means and content of instruction. What this implies is that in choosing an instructional means, one must consider

both the goals of increased knowledge and the development of intellectual skills. Any experience involves both a content and a means. The content is related to the knowledge derived, while the means or method is related to the skills assumed or developed in the course of relying upon that means. Empirical results are discussed to reinforce this assertion. It is also argued that human intelligence is traceable to cultural factors which are difficult to detect because they pertain to means rather than to the content of education. Two primary means of education are written language and the extended written prose statement, and these in large part define what is meant by intelligence. In particular, the use of extended written prose statement, and these in large part define what is meant by intelligence. In particular, the use of extended written prose statements from which logical implications can be drawn is required for the type of hypothetical, theoretical thinking so valued in our culture. In the past, such hypothetical thinking has been ill-defined and not legitimately stated as a goal of education. However, through the use of written language, it has been an unintended but valued consequence. Researchers are cautioned to make a choice of instructional means as rational and reflective a process as the choice of ends.--Dale H. Schunk

GS Parker, J. Comment on "Three models of scientific development" by M. J. Mulkay. Sociological Review, 1975, 23, 527-533.

Ps Paxton, R. Note: Some criteria for choosing between explanations in psychology. Bulletin of the British Psychological Society, 1976, 29, 396-399.

SB Percival, W. K. The applicability of Kuhn's paradigms to the history of linguistics. Language, 1976, 52, 285-294.

SB Perkins, R. A., Parker, J. B., & Daste, B. M. Multiple-influence paradigms in illness. Social Casework, 1975, 56, 531-537.

SB Perry, N. A comparative analysis of "paradigm" proliferation. British Journal of Sociology, 1977, 28, 38-50.

GS Phillips, D. L. Paradigms and incommensurability. Theory and Society, 1975, 2, 37-61.

Ed Popp, J. A. Paradigms in educational inquiry. Educational Theory, 1975, 25, 28-39.

T Powell, M., & Cahen, L. S. Policy issues related to research on instructional time. San Francisco: Far West Laboratory for Educational Research and Development, 1977.

Ed Preciens, R. P. The educational philosopher and educational research. New Zealand Journal of Educational Studies, 1975, 10, 15-25.

Ed Prince, W. F. A paradigm for research on music listening. Journal of Research in Music Education, 1972, 20, 445-455.

T Purves, A. C., & Fillion, B. Teaching skills in secondary English. Bloomington, Indiana: National Center for the Development of Training Materials in Teaching Education, Indiana University, 1973.

Ps Rankin, H. Case histories and shorter communications: Are models necessary? Behaviour Research and Therapy, 1976, 14, 181-183.

Ed Richer, S. School effects: The case for grounded theory. Sociology of Education, 1975, 48, 383-399.

Ed Rist, R. C. On the relations among educational research paradigms: From disdain to detente. Anthropology and Education Quarterly, 1977, 8, 42-49.

SB Ritzer, G. Sociology: A multiple paradigm science. The American Sociologist, 1975, 10, 156-167.

In Kuhnian terminology, sociology, as a science, lacks a single overarching paradigm, and instead may be characterized as a multiple paradigm discipline. It is argued that the paradigm concept can be meaningfully used to analyze the major sub-communities within sociology. Three basic sociological paradigms are identified: social facts, social definitions, and social behavior. Each of these paradigms is discussed in terms of its relevant exemplars, images of subject matter, theories, and methods. This classification allows us to do much more than understand theoretical differences. A major benefit is that it allows us to see our methodological differences and to see how these differences are intimately related to theoretical differences. There are a number of important implications of this analysis of dominant paradigms. For one, each of the paradigms, by itself, is at present inadequate to fully explain any social phenomena. What is needed is less competition and conflict, and more effort at paradigmatic integration. Another implication is that although we

commonly believe in sociology that the basic split is between structural-functionalism and conflict theory, in fact these two theories share the same paradigm and have far more commonalities than differences. It is also argued that social behaviorism has not been given the status it properly deserves, and will be an even more powerful force in the field in the future.--Dale H. Schunk

SB Rogers, E. M. Communication and development: The passing of the dominant paradigm. Communication Research, 1976, 3, 213-240.

Ps Romanyshyn, R. D. Metaphors and human behavior. Journal of Phenomenological Psychology, 1975, 5, 441-460.

GS Romer, A. How to choose a theory: Science for nonscientists. American Journal of Physics, 1973, 41, 947-952.

T Rosenshine, B. A national teaching contest. Unpublished manuscript, University of Illinois at Urbana-Champaign, 1975.

T Rosenshine, B. Current topics in research on teaching. Unpublished manuscript, University of Illinois at Urbana-Champaign, 1976.

T Rosenshine, B., & Furst, N. F. The use of direct observation to study teaching. In R. M. W. Travers (Ed.), Second handbook of research on teaching. Chicago: Rand McNally, 1973.

T Ryans, D. G. Current issues in research on teacher behavior. Unpublished manuscript, Education Research and Development Center, University of Hawaii, 1967.

SB Sarup, G. Levels of analysis in social psychology and related social sciences. Human Relations, 1975, 28, 755-769.

Ed Scandura, J. M. Structural learning and the design of educational materials. Educational Technology, 1973, 13(8), 7-13.

Two main premises are stated first: (1) educational improvement will come about only as a result of a better understanding of the teaching-learning process and a corresponding development in educational design, and (2) educational design already provides theoretical bases for improvement and should be used more widely. A brief history of educational technology follows. The author suggests that substantial progress has been made during and since the 1960's. Furthermore,

the author contends that there are no inherent limitations in structural approaches to education, despite criticism to the contrary. The author's own theory of structural learning is then outlined as an example of an important development in educational technology. The basic assumption of the theory is that knowledge can best be represented in terms of rules rather than associations. The theory itself is partitioned into three distinct levels of theorizing. The first level deals with how to account for competence behavior in terms of rules and their interactions. The second level is an idealized theory concerned with operationally defining an individual's knowledge as well as how and why the knowledge is put to use. The third level deals with memory and the limited information processing capacity of individuals. The author notes an increasing amount of empirical support for the theory. The contributions and relationships among basic science, technology, and professional "know-how" are presented from the perspective of the theory of structural learning. Finally, four examples of specific products that have stemmed from the theory are presented. These include an algorithmic approach to a math curriculum, a project designed to improve basic arithmetic skills, self-instructional materials for testing and teaching critical reading skills, and a project aimed at helping teachers assimilate and use a taxonomy of processing skills.--Alexis L. Mitman

T Schwelnhart, L. J., & Turner, R. L. Socialization and classroom management. Bloomington, Indiana: National Center for the Development of Training Materials in Teaching Education, Indiana University, 1973.

T Shavelson, R. J. Teachers' decision making. In N. L. Gage (Ed.), Psychology of teaching methods. 75th Yearbook of the National Society for the Study of Education (Part I). Chicago: University of Chicago Press, 1976.

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Educational research has traditionally concentrated on how teachers act or perform in the classroom and has slighted the problem of how teachers think

about their pupils and instructional problems. There are, however, a number of research strategies which have been employed to study thinking, human judgment, and decision making, and these seem adaptable for educational uses. Information-processing, Bayesian, and regression (including lens model) theories have been applied in a wide variety of contexts, and several studies illustrating these approaches are discussed. The main conclusions to be drawn from this work are that given a problem situation, it is probably a poor strategy to look only at what a person does to solve the problem or to make a decision. More crucial may be how he sizes up the situation, how the problem is formulated, what is judged to be relevant and what irrelevant, and which sources of information are considered useful and which are judged of no importance. Given a clear problem formulation, the set of more acceptable behaviors is now distinguishable from the set of less acceptable ones. The choice of a particular member of that set may be far less important than the set of intellectual processes that led to the definition of the problem. In current attempts to establish competency-based programs for evaluating teachers, perhaps educators should become less concerned with the evaluation of overt behaviors and more concerned with how these individuals think about their pupils and about the problems of their management. Some suggested future educational applications are discussed.--Dale H. Schunk

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Ed Tesch, R. The humanistic approach to educational research. Santa Barbara, CA.: The Fielding Institute, 1976.

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Ed Tikunoff, W. J., & Ward, B. A. (Eds.) Special issue: Exploring qualitative-quantitative research methodologies in education. Anthropology and Education Quarterly, 1977, 8, 37-163.

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SB Useem, M. Government influence on the social science paradigm. The Sociological Quarterly, 1976, 17, 146-161.

Ed Vest, F. Using models of operations and equations. Educational Studies in Mathematics, 1973, 5, 147-155.

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Ps Vinsonhaler, J. F., Wagner, C. C., & Elstein, A. S. The inquiry theory: An information processing approach to clinical problem solving research and application. Unpublished manuscript, Michigan State University, 1977.

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T Wagener, J.W. Toward a heuristic theory of instruction: Notes on the thought of Michael Polanyi. Educational Theory, 1970, 20, 46-53.

This paper develops a theory of instruction based on Michael Polanyi's philosophy of "personal knowledge." The theory contains components of both Bruner's theory of instruction and Piaget's theory of development. The foundations of the theory are described in terms of four categories: (1) a structural-ontological category, (2) a process category, (3) a relationship category, and (4) a paradigm category. The first category presents the view that the human knower actively tries to "make sense" of the world in the domain of his own awareness. The teacher's role is not to motivate the child to learn something so much as it is to change the conditions that keep the child from learning. The process category refers to the belief that all knowledge involves receiving and shaping. In receiving knowledge, the knower may perceive gaps which are an impetus for new formulations. Knowing, then, is a process and not a product. The teacher's role here is to foster the knower's sense of discrimination and judgment. The relationship category discusses in greater detail the teacher's roles. The teacher can be viewed as an active influence in students' lives. Many influential teachers of different persuasions assure students' broad exposure and independent viewpoints. The paradigm category summarizes the philosophy of Polanyi. Polanyi sees the goal of education as the educated mind. The educated mind exemplifies both control and anticipation; also, it seeks understanding and guidance from its own creations. The teacher aids the process by helping to initiate, influence, and appraise the knower's claims as he develops.--Alexis L. Mitman

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T Winne, P. H., & Marx, R. W. Reconceptualizing research on teaching. Journal of Educational Psychology, 1977 (In press).

Research on teaching generally has not collected and structured data which can adequately represent or test psychological rulationships in teaching. Little emphasis has been given to studying how teachers gather and process data which guides teaching practice. Rarely have studies characterized or described teaching treatments or students in terms of what is known about human learning. Also, research generally ignores the fact that students influence the teacher's actions in the classroom. This paper identifies and discusses the value gained by incorporating these perspectives into a new reconceptualization of research on teaching.--Authors

Ps Wozniak, R. H. A dialectical paradigm for psychological research: Implications drawn from the history of psychology in the Soviet Union. Paper presented at the annual meeting of the American Psychological Association, New Orleans, September 1974.

GS Wulbert, R. Using contradictions to explore the conventions of theorizing. Theory and Society, 1975, 2, 467-482.

GS Wurtman, R. J. Changing norms: Before and after Kuhn. Science, 1977, 197, 514.

T Young, T.R., & Beardsley, P. The sociology of classroom teaching: A micro-functional analysis. The Journal of Educational Thought, 1968, 2, 175-186.

The central thesis of this paper is that the classroom is more important as a socializer than as a transmitter of knowledge. In other words, the content of classroom interactions is secondary to the structure. The classroom employs certain imperatives which define it as a social system; these are: definition of the situation, recognition, solidation, involvement, rules of irrelevance, shielding, rule-directed rules, continuation, and disengagement. One of the prime requisites of any social system is that everyone share the same definition of the situation, and that all competing alternatives be put aside. This entails

knowing what is expected with each different situation. Recognition refers to the requirement of separating legitimate members of the system from illegitimate ones. Legitimate members participate in the system, illegitimate ones do not. Solidation means that members must cease to be private individuals. "We-ness" is emphasized at the expense of "I-ness". Another social system norm is that members must become involved in activities. In order to maintain involvement, many events occurring in a classroom must be defined as irrelevant. Socialization consists of learning how to recognize such events and how to put them out of awareness. Since members cannot maintain constant commitment, outside diversions must be shielded, which may entail physical removal. The most general classroom rule is that behavior shall be rule-directed. Continuation means that participants learn that activities are legitimate until the system is legally terminated, usually through graduation. Disengagement means that all systems must be officially terminated. In short, most behavioral events in the classroom are better understood with respect to social system imperatives than when viewed as related to enlightenment, erudition, and self-fulfillment--catch-words frequently found in post ad hoc rationalizations for schooling.--Dale H. Schunk

Ps Zeleny, M. On the inadequacy of the regression paradigm used in the study of human judgment. Theory and Decision, 1976, 7, 57-65.